START

0019402

November 19, 1991

Meeting Minutes Transmittal/Approval
100 Area Field Activities
450 Hills Street, Room 47
Richland, Washington
October 17, 1991

From/
Appvl.: _______________ Date: 21 Nov 91
Jim Goodenough, Unit Manager, DOE-RL (A5-19)

Appvl.: _______________ Date: 12/27/91
Larry Goldstein, 100-HR-1/BC-1/BC-5/NR-1/KR-1 Unit Manager, WA Department of Ecology

Appvl.: _______________ Date: 12/17/91
Douglas R. Sherwood, 100-HR-1/HR-3/DR-1/BC-1/BC-5 Unit Manager, EPA (B5-01)

Meeting Minutes are attached. Minutes are comprised of the following:

Attachment #1 - Meeting Summary/Summary of Commitments and Agreements
Attachment #2 - Attendance List
Attachment #3 - Agenda
Attachment #4 - Commitments/Agreements Status List
Attachment #5 - Briefing Materials: Aquatic Biota Sampling
Attachment #6 - Briefing Materials: Work Plan Tasks Common to all Reactor Area Operable Units
Attachment #7 - Ecology Letter of Approval - Provided on Nov. 21, 1991

Prepared by: _______________ Date: 11/24/92
SWEC Support Services

Concurrence by: _______________ Date: 11/21/91
WHC Coordinator

9212530330

100 Area Field Activities
October 17, 1991

Distribution:

Pamela Innis, EPA (B5-01)
Donna Lacombe, PRC
Ward Staubitz, USGS
Diane Clark, DOE (A5-55)
Doug Fassett, SWEC (A4-35)
Mary Harmon, DOE-HQ (EM-442)
Mike Thompson, DOE-RL (A5-19)
Tom Wintczak, WHC (B2-15)
Mel Adams, WHC (H4-55)
Merl Lauterbach, WHC (H4-55)
Linda Powers, WHC (B2-35)
Don Praast, GAO (A1-80)
David Pabst, WHC (B2-35)

Ronald D. Izatt (A6-95)
Director, DOE-RL, ERD
Ronald E. Gerton (A6-80)
Director, DOE-RL
Roger D. Freeberg (A6-95)
Chief, Rstr. Br., DOE-RL/ERD
Steven H. Wisness
Tri-Party Agreement, Prog. Mgr.
Richard D. Wojtasek (B2-15)
Prgm. Mgr. WHC

ADMINISTRATIVE RECORD: 100-HR-1, 100-HR-3, 100-DR-1, 100-BC-1, 100-BC-5, 100-KR-1, 100-KR-4, 100-NR-1, 100-NR-3; Care of Susan Wray, WHC (H4-51C)

Please inform Doug Fassett (SWEC) of deletions or additions to the distribution list.

Attachment #1

Meeting Summary and Summary of Commitments and Agreements
100 Area Activity Summary
October 17, 1991

1. **Aquatic Biota Sampling:** C. E. Cushing (WHC) presented an update on aquatic biota sampling efforts in the 100 Areas (see Attachment #5).

2. **Work Plan Tasks:** R. E. Peterson (WHC) gave an update on the 100 Area work plan tasks (see Attachment #6). Mr. Peterson stated he is representing a group that is doing compilation work for groundwater data, geologic data, and shoreline investigations. IT is doing the actual spring sampling. The purpose of the spring and seep sampling program is to collect data that will be used to model the flux of contaminated groundwater that is flowing to the river. Also, an evaluation will be made of the possible health and environmental impacts of the contaminant groundwater.

3. **Approval of SOWs:** Ward Staubitz (USGS) stated that there was a problem with the IT scope of work (SOW) in that he didn't think it met the intent of seepage sampling described in the work plan. A discussion followed on whether or not SOWs should be treated as secondary documents. The regulators stated that they would like to receive the SOWs two weeks prior to the initiation of activities and it was their understanding that the SOWs would be treated as secondary documents. It was determined that the SOWs would be issued as WHC-SD documents and not secondary documents which require a 30 day DOE-HQ review. Merl Lauterbach stated that SOWs will be issued well in advance of the activities and the comments will be treated as record comments. Mr. Lauterbach will collect SOWs for all nonintrusive activities.

4. **100-HR-1:** Jeff Ayres (WHC) stated that the surface radiation study was completed and the reports would be distributed. The geophysical surveys were completed. Septic tank 1607-H2 was completed and septic tank 1607-H4 is scheduled to be done in April 1992.

5. **Pipeline Study:** The pipeline study (camera assessment) revealed no leaks or visible cracks in the pipe. There was no radiation detected in the pipeline itself. Alan Krug (WHC) stated that no more pipeline evaluations are planned and the pipeline would be addressed in the remediation process. The historical records indicated that there was leakage in the D and possibly the H areas. The leaks were most likely at the joints and were probably due to hairline cracks.

6. **Electrical Facilities:** A site walkover was done to find obvious leaks and spills. There were some areas that appeard to be leaks that will be sampled on November 25, 1991. Another area to be tested is the area where a transformer, with a PCB content of 245 ppm, was found. Mike Stankovich (WHC) stated that he sampled locations in the D Area last month based on his criteria and he is hoping to have results back by the end of October.

7. **Vadose Zone Drilling:** Drilling began in 100-DR-1 instead of in 100-HR-1 due to complications with the permit. Merl Lauterbach (WHC) stated that four drill rigs are now available and he would like to start drilling in 100-HR-1 soon. Mr. Lauterbach said he would like to get approval to begin drilling in either H or D area first. Mr. Lauterbach prefers to leave the drill rigs in the D area to agree with the letter of construction to Kaiser. WHC/DOE would like to get five day notifications to Ecology to begin drilling and get their approval for the balance of the wells in 100-DR-1 and 100-HR-3. Chuck Cline (Ecology) said the SOW seemed to indicate that only one borehole would be logged, but Ecology prefers that they all be logged. Fred Roeck (WHC) stated that existing boreholes in contaminated areas would be evaluated and downhole geophysics would be done in some of the initial borings. A comparison would then be made to see if useful information is being gained.

8. **Drilling Status:** Merl Lauterbach gave an update on the drilling status. Drilling began on groundwater well #8 the morning of October 17, 1991. Vadose zone wells 116-D1-A and 116-D1-B will be started the morning of October 18. Groundwater wells D-8 and D-9 will be started on October 17.

9. **Approval of Wells:** Chuck Cline will fax comments on the SOW to Merl Lauterbach. The SOW will then be amended. It was agreed that Ecology would approve the additional five-day notifications based on the incorporation of comments in the SOW. Instead of a total of three boreholes in 100-HR-1, two additional boreholes would be drilled in 116-DR-9 (see Attachment #7).

10. **100 Areas Work Plans:** Merl Lauterbach stated that mistakes were discovered during a WHC review of the five 100 area work plans. WHC feels that these mistakes need to be corrected. Mr. Lauterbach suggested that the mistakes be negotiated with the regulators. Mr. Lauterbach stated that he would not change the documents at all until comments have been received from the regulators. BCC is reviewing the work plans for Ecology and the comments should be ready in about three weeks. *Mr. Lauterbach stated that WHC views the non-intrusive work in the revised work plans as sufficient to meet the M-30-00 milestones, and he suggested that the regulators should respond if they do not agree.*

Announcements

11. It was announced that Darci Teel (Ecology) will be the unit manager for 100-HR-1 and 100-DR-1.

12. Joan Kessner and Jeff Lerch of WHC-OSM will attend the unit manager's meetings when the agenda requires their presence.

Attachment #2

Attendance List
100 Area Field Activities
October 17, 1991

Name	Organization\Responsibility		Phone
Thompson, K. Michael	DOE-RL	ER Programs	509-376-6421
Goodenough, Jim	DOE-RL	100 Areas O.U.	509-376-7087
Cline, Chuck	Ecology	U.M. Hydrogeo.	206-438-7556
Cross, Steve	Ecology	CERCLA Unit	206-459-6675
Teel, Darci	Ecology	CERCLA	509-545-2312
Mullen, Richard	PMX	Ecology Support	206-455-2550
Innis, Pamela	EPA	Unit Manager	509-376-4919
Einan, Dave	EPA	Unit Manager	509-376-3883
Lacombe, Donna	PRC	EPA Support	206-624-2692
Staubitz, Ward	USGS	EPA Support	206-593-6510
Drost, Brian	USGS	EPA Support	206-593-6510
Fryer, Bill	SWEC	GSSC	509-376-9830
Knox, Kathy	CNES	GSSC	509-376-5011
Shigley, Diane	SWEC	GSSC	509-376-5038
Day, Roberta	WHC	100-BC-1	509-376-7602
Clark, Steven	WHC	Tech. Coord.	509-376-1513
Krug, Alan	WHC	100 HID Areas	509-376-5634
Stankovich, Mike	WHC	100 Area	509-376-2493
Ayres, Jeff	WHC	100-HR-1	509-376-3918
Weiss, Steve	WHC	100 Agg Area	509-376-1683
Peterson, R.E.	WHC	100 Agg Area GW	509-376-5858
Kessner, Joan	WHC	OSM	509-373-3507
Lerch, Jeff	WHC	OSM	509-373-3419
Lauterbach, Merl	WHC	Env. Engr.	509-376-5257

Attachment #3

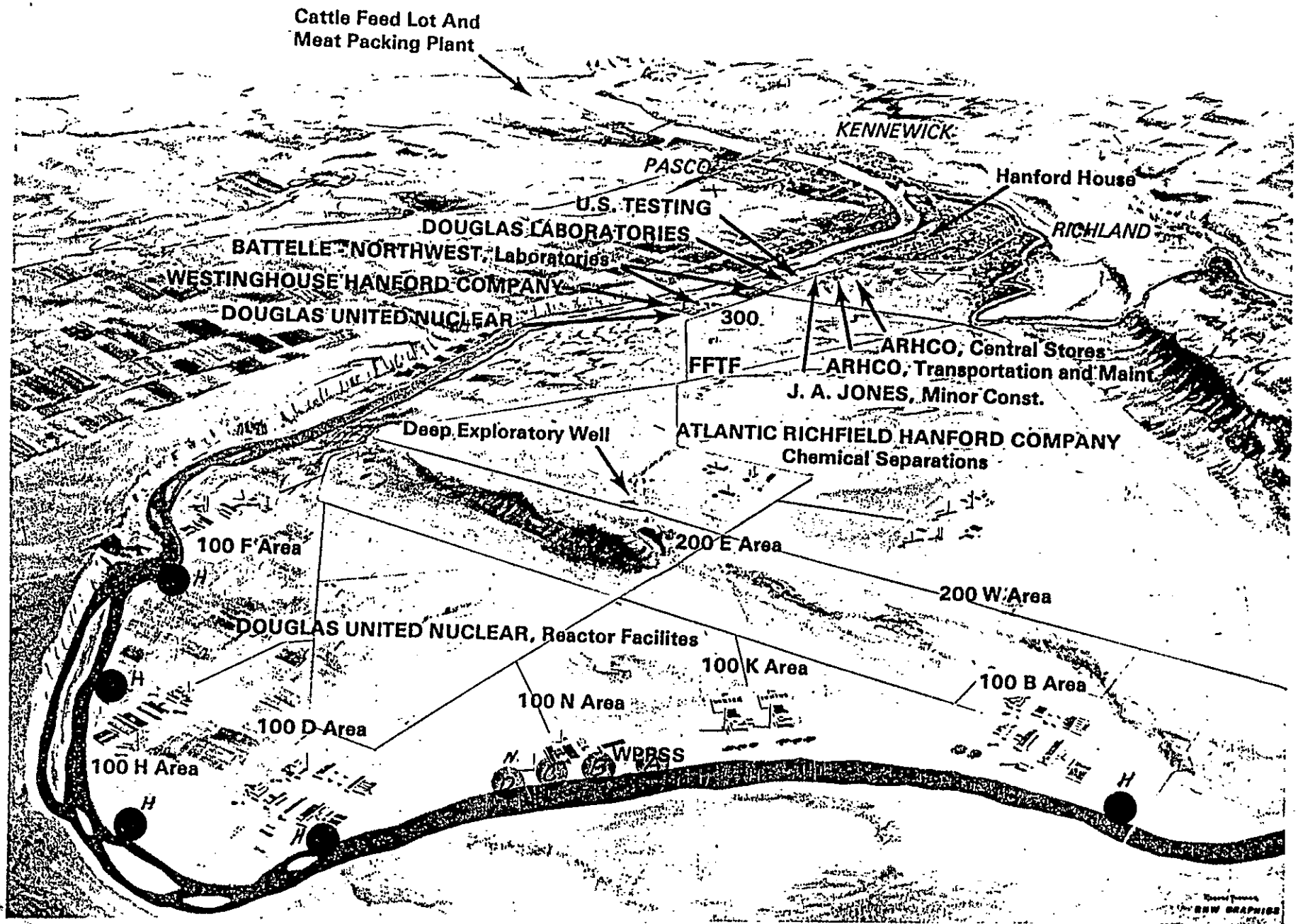
Agenda
100 Aggregate Area Status
October 17, 1991

1. 100 Area Aquatic Sampling - S. Weiss/B.Cushing
2. 100 Area Spring Sampling - R. Peterson
3. <u>100-HR-1</u>
    - o Surface Radiation Survey - J. Ayres
    - o Geophysical Surveys - J. Ayres
    - o Septic Tanks - J. Ayres
    - o Pipeline Assessment (Camera Study) - R. Day
    - o Electrical Facilities - M. Stankovich
    - o Vadose Zone Drilling - J. Ayres
4. Drilling - M. Lauterbach

Attachment #4

Commitments/Agreements Status List
Aggregate Area Status
October 17, 1991

Item No.	Action	Status
1HR1.28	Determine when the topographic mapping will be available on HEIS, who is responsible for digitizing the mapping, and when it will be available. Action: Alan Krug (11/15/90)	Open: Remains open on the question of when the data will be in HEIS. (7/18/91)
1HR3.29	Provide regulators with information about the situation concerning the cooling-water discharge pipeline/vent pipes on the island opposite D reactor. Action: Jim Goodenough (11/15/90)	Open: WHC sent a letter to DOE requesting guidance on the extent of NEPA documentation required and is awaiting DOE's response. (7/18/91)
1HR3.32	Regarding the removal of the vent pipes, WHC will: 1) Determine the need for an ACE permit; 2) obtain a letter from ACE that gives approval to begin work before the need for the permit is determined; and, 3) draft letters on the matter to the Natural Resources Trustees. Action: A. Krug (1/15/90)	Open: Pending overall resolution (7/18/91)
1NR.3	Provide to Ecology (and EPA if desired) the DOE guidance documents that are needed. Action: Larry Goldstein (7/18/91)	Open: Larry Goldstein will send a letter specifying exactly what supporting documents Ecology would like to receive. (7/18/91)
1AAMS.1	The 100 Area schedule assumptions presented by Merl Lauterbach are to be discussed with the regulators and resolved. Action: Doug Sherwood, Larry Goldstein, Mike Thompson (9/19/91)	Open


Cattle Feed Lot And
Meat Packing Plant
KENNEWICK
PASCO
Hanford House
U.S. TESTING
DOUGLAS LABORATORIES
RICHLAND
BATTELLE NORTHWEST, Laboratories
WESTINGHOUSE HANFORD COMPANY
DOUGLAS UNITED NUCLEAR
300
FFTF
ARHCO, Central Stores
ARHCO, Transportation and Maint.
J. A. JONES, Minor Const.
Deep Exploratory Well
ATLANTIC RICHFIELD HANFORD COMPANY
Chemical Separations
100 F Area
200 E Area
200 W Area
DOUGLAS UNITED NUCLEAR, Reactor Facilites
100 K Area
100 B Area
100 N Area
100 D Area
100 H Area
WPPSS
H

#5

100 AREA OPERABLE UNIT AQUATIC SAMPLING

PERIPHYTON

September 3-4, 1991
100-HR-3

Station	Chlorophyll a ($\mu g/cm^2$)
HA	0.06*
HB	0.10
HC	0.14
HD	0.07
HE	0.05

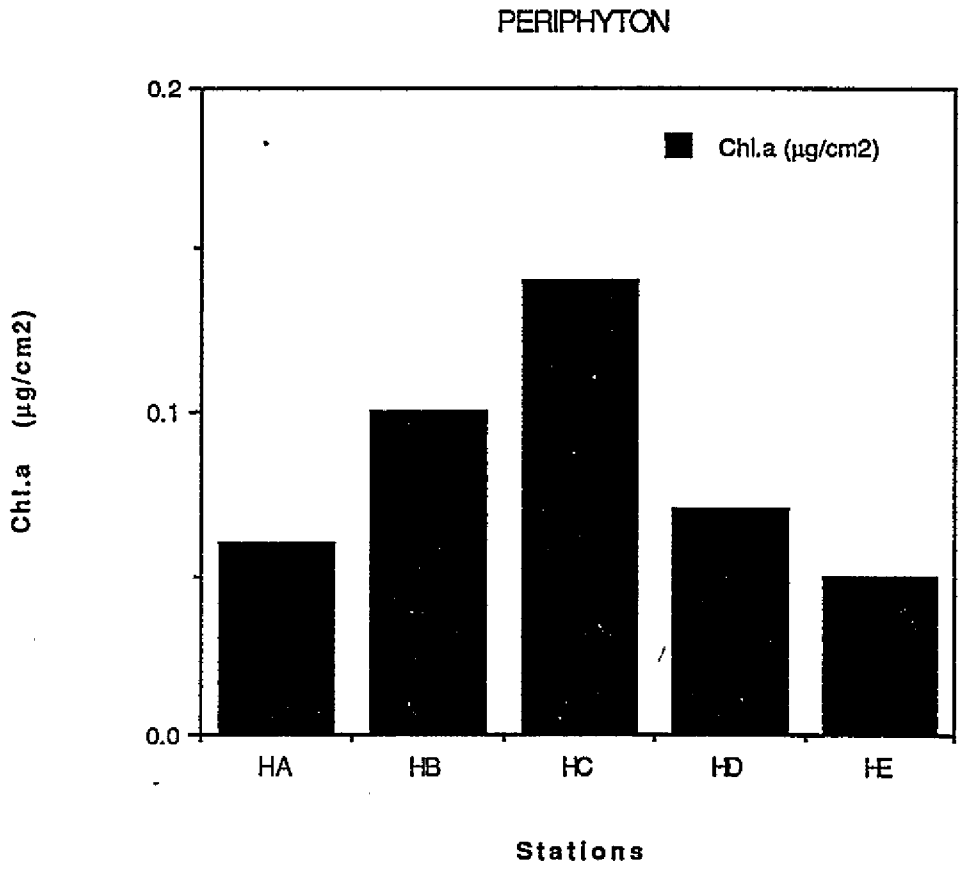
	(μg/mg DW)
HA	0.02
HB	0.02
HC	0.09
HD	0.09
HE	0.02

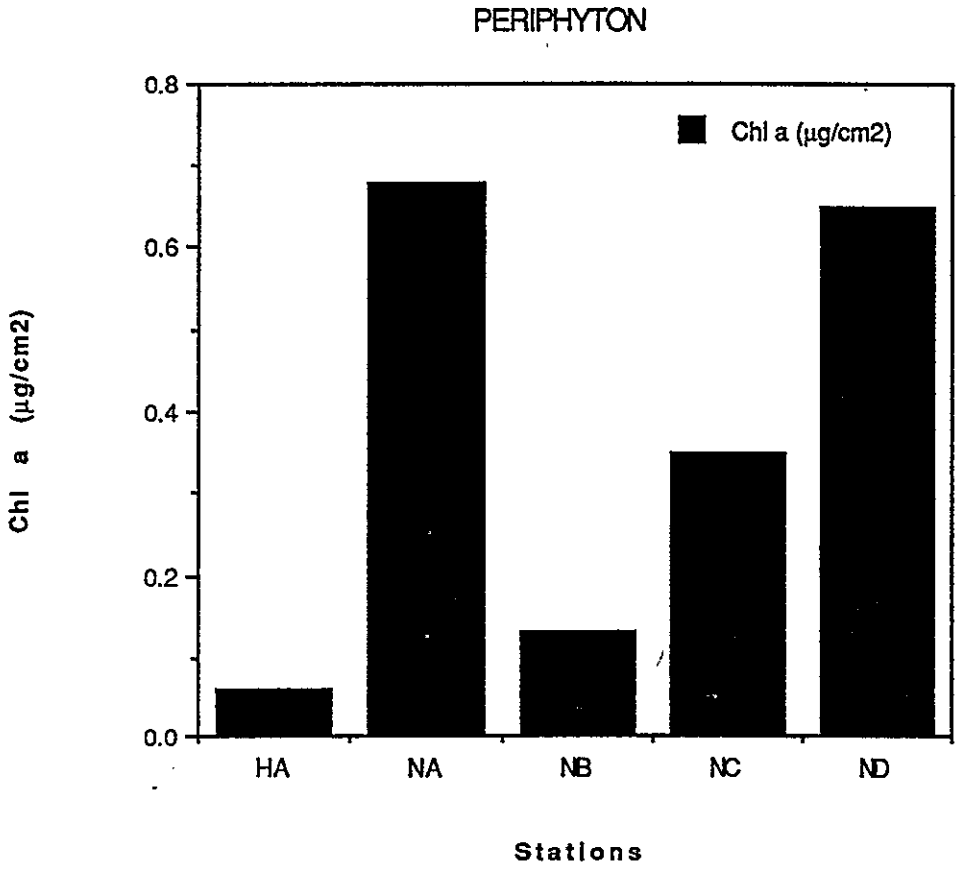
September 9, 1991
100-NR-1

Station	Chlorophyll a ($\mu g/cm^2$)
HA	0.06
NA	0.68
NB	0.13
NC	0.35
ND	0.65

	(μg/mg DW)
HA	0.02
NA	0.12
NB	0.10
NC	0.13
ND	0.06

*All values are means of 3 samples.




PERIPHYTON
Chl a (µg/cm2)
0.8
0.6
0.4
0.2
0.0
Chl a (µg/cm2)
HA
NA
NB
NC
ND
Stations

Analyses of individual samples and mean values.

	NA		NB		NC		ND	
	cm^2	mg	cm^2	mg	cm^2	mg	cm^2	mg
9-9-91	1.05	0.17	0.06	0.02	0.45	0.28	1.16	0.08
	0.75	0.15	0.09	0.08	0.08	0.10	0.52	0.02
	0.23	0.04	0.23	0.20	0.53	0.06	0.27	0.08
mean	**0.68**	**0.12**	**0.13**	**0.10**	**0.35**	**0.13**	**0.65**	**0.06**

	HA		HB		HC		HD		HE	
	cm^2	mg	cm^2	mg	cm^2	mg	cm^2	mg	cm^2	mg
9-3;4-91	0.08	0.02	0.14	0.03	0.07	0.02	0.04	0.19	0.05	0.02
	0.05	0.02	0.08	0.02	0.27	0.23	0.05	0.02	0.03	0.01
	0.05	0.02	0.08	0.02	0.07	0.03	0.12	0.05	0.06	0.02
mean	**0.06**	**0.02**	**0.10**	**0.02**	**0.14**	**0.09**	**0.07**	**0.09**	**0.05**	**0.02**

R. Peterson

#6

UNIT MANAGER BRIEFING -- October 17, 1991: 100 Aggregate Area Investigations (R. E. Peterson)

Viewgraph #1:

WORK PLAN TASKS COMMON TO ALL REACTOR AREA OPERABLE UNITS

- Task 3 -- Geologic Investigations
- Task 4 -- Surface Water and Sediments Investigations
- Task 5 -- Vadose Zone Investigations
- Task 6 -- Groundwater Investigations

Viewgraph #2:

GENERALIZED WORK BREAKDOWN STRUCTURE FOR VARIOUS WORK PLAN TASKS

Tasks: Geology, Vadose Zone, Surface Water, and Groundwater

Subtask: Data Compilation and Review

- Data Inventories
- How to Access Information
- Data Summaries (Tables, Maps, Etc.)

Subtasks: Field and Laboratory Activities

- Drilling
- Sampling Wells and Bank Seepage
- Chemical and Radiological Analyses

Subtask: Data Evaluation

- Usefulness of Existing Wells and Data
- Groundwater Movement
- Nature and Extent of Contamination
- Interim Response Measure Decisions

Viewgraph #3:

INTEGRATED GENERAL INVESTIGATIONS FOR THE 100 AGGREGATE AREA: TPA MILESTONES

M-30-00 (Sep 93)	Complete integrated general investigations and studies for the 100-Area.
M-30-01 (Feb 92)	Submit a report (secondary document) to EPA and Ecology evaluating the impact to the Columbia River from contaminated springs and seeps, as described in the operable unit work plans listed in M-30-03.
M-30-02 (May 92)	Submit a plan (primary document) to EPA and Ecology to determine cumulative health and environmental impacts to the Columbia River, incorporating results obtained under M-30-01.
M-30-03 (Sep 92)	Complete all nonintrusive field work as identified in draft work plans for the following operable unit work plans: 100-HR-1, 100-HR-3, 100-DR-1, 100-BC-1, 100-BC-5, 100-KR-1, 100-KR-4, 100-NR-1, 100-NR-3, and 100-FR-1.
M-30-04 (Sep 92)	Submit a report (secondary document) to EPA and Ecology evaluating the interaction of Columbia River and the unconfined aquifer for aquifer hydraulic parameters.
M-30-05 (Sep 93)	Install all field instrumentation and initiate monitoring activities necessary to perform long-term evaluation of Columbia River and unconfined aquifer interaction, in accordance with the tasks defined in operable unit work plans listed in M-30-03.

Viewgraph #4:

Progress on Selected General Investigations (October 1991):

DATA COMPILATION SUBTASKS (Existing Wells, Geology, Vadose, Groundwater, and Shoreline Investigations)

- Data compilation report related to fitness-for-use investigations of existing wells is in draft form
- Data compilation report covering geologic and hydrologic data is in draft form
- Data review report for geologic and hydrologic information is in preparation
- Data compilation report for shoreline seepage and river sediment sampling is in progress (PNL subcontract)
- Literature review and feasibility report on estimating aquifer properties from water level fluctuations is complete

Viewgraph #5:

Progress continued:

LIST OF DATA COMPILATION REPORTS (WHC Supporting Documents)

- Summaries of Well Construction Data and Field Observations for Existing 100 Aggregate Area Operable Unit Resource Protection Wells
  [R. K. Ledgerwood]
- Hydrologic and Geologic Data Available for the Region North of Gable Mountain, Hanford Site, Washington
  [R. E. Peterson]
- Geologic Information Summary for the Northern Portion of the Hanford Site, Washington
  [K. A. Lindsey]
- Hydrologic Information Summary for the Northern Portion of the Hanford Site, Washington
  [R. E. Peterson and M. J. Hartman]
- Summary of Available Information on Bank Seepage and River Sediments, Hanford Reach of the Columbia River, Washington
  [R. L. Dirkes and R. E. Peterson]

Viewgraph #6:

Progress continued:

FIELD ACTIVITIES SUBTASKS (Geologic Mapping, Sampling Existing Wells, Water Level Measurements, and Shoreline Seepage Sampling)

- Reconnaissance mapping of 100-BC and 100-K Areas complete; search for shoreline seepage locations completed during seepage sampling; aerial photo reconnaissance completed during October 13 low river stage.
- Seepage sampling nearly complete; approximately 25 locations sampled; 100-N sampling, as well as revisiting 100-K and 100-H, are underway.
- Water level and temperature recorders have been installed in three wells each at 100-BC, 100-H, and 100-F Areas; they started operation in late September. A river stage recorder started operation at 100-H at that time also. Radiotelemetry of data has been partially established.
- Simultaneous sampling of a seep and adjacent monitoring well is planned for late October at 100-H. Samples will be collected periodically to represent the daily river stage fluctuation cycle.

Viewgraph #7:

Progress continued:

DATA EVALUATION SUBTASKS (Existing Wells, Water Table Maps, Contaminant Plume Maps, and Aquifer Properties)

- Initial phases of fitness-for-use evaluations of existing wells are complete. Sampling history of each well has been determined. Current use of each well has been documented.
- A water table map for the 100 Aggregate Area is produced twice a year under the Operational Monitoring Program. Water table maps for selected historical periods are in draft form.
- Data sets for contaminant plume maps have been assembled. The Silicon Graphics Volume Modeling software will be used to compute contaminant amounts where plume volumes can be defined (e.g. 100-H chromium plume).
- Theoretical equations relating water level fluctuations to aquifer properties will be tested using new data obtained from the data logger installations. Results will be compared to aquifer properties estimated by other methods, such as those based on lithology and contaminant pulse migration rates.

Viewgraph #8:

PROGRAM PROPOSED TO SATISFY MILESTONE M-30-04:

"Submit a report to EPA and Ecology evaluating the interaction between the Columbia River and the unconfined aquifer for aquifer hydraulic parameters."

- Review and analyze the theoretical approaches that have been published for inferring aquifer properties from fluctuating water levels. Describe the applicability to the Hanford environment. (Completed -- internal letter report).

- Using data from recently installed water level recorders in wells, test the various theoretical approaches. Compare the results with (a) existing aquifer test results, (b) estimates for aquifer properties based on lithologies, and (c) velocity estimates determined from the migration rate of contaminant pulses.

- Describe the fluctuating water levels in wells for each reactor area, using (a) historical water level data, (b) new data from well recorders and new wells, and (c) variations in river stage. Describe temperature variability in groundwater wells, using historical data.

- After completing the items above, discuss the results with those involved in meeting Milestones M-30-01 and -02, and with the regulators. Any subsequent work deemed necessary should be consistent with the rescoped work plans, or modifications to work plans proposed. Decide how to proceed with Milestone M-30-05 tasks.

- Document the results in a Supporting Document by September 1992.

- Design and install additional river and groundwater well monitoring systems, as required, to meet Milestone M-30-05.

11/21/91
XC: 1) Merl Lauckhart
2) Alan Krug

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

November 18, 1991

Mr. James Goodenough
100 Areas Unit Manager
U.S. Department of Energy
P.O. Box 550
Richland, WA 99352

Re: Review of Scope of Work for 100-HR-3 and 100-DR-1 by the Washington State Department of Ecology

Dear Mr. Goodenough:

The following is an informal review by Ecology of the Scopes of Work (now called Description of Work - DOWs) for drilling activities contained within both the 100-HR-3 and 100-DR-1 workplans. Because drilling activities are proceeding in the 100-HR-3 and 100-DR-1 operable units before the workplans have been reviewed, this scope of work review must be considered preliminary and concerns only those activities occurring before workplan acceptance.

After a complete review of the workplans, some of the scope of work could change from what is accepted in this letter. The following comments apply to those of the 22 wells and 17 vadose boreholes that can be completed in the period before the workplans have been accepted. The DOWs could be considered final if there is little changed in the workplans.

100-HR-3 SCOPE OF WORK

Section 3.1 - Soil Screening - What is the abbreviation (TBI)? When will the procedures for Radiological Testing of Geological Materials, EII 3.4, be available? The addition of a hexavalent screening methodology is appropriate and should be used as soon as the equipment can be obtained. This might provide some means of detecting higher hexavalent chromium concentrations especially in those locations close to the water table.

The second paragraph discusses action levels. There should be values available for each of the screening methods. Since drilling is in progress, there must be some levels that have already been determined, i.e., 75 cpm as background for the radionuclide screening. These values should be stated in this description of work.

Section 3.3 - Soil Sampling (Physical Property) - The first discrepancy appears to be the inconsistency between the workplan for HR-3 and the scope of work. It is stated that physical soil samples will be collected in wells 1, 3, 7, 9, 14, 18 and 21 in the workplan. However, in the DOW the physical

samples will be gathered in wells 1, 3, 7, 10, 14, 18 and 21. Is it agreed that well #10, the deep well, will be sampled and analyzed for physical properties?

Section 3.4.1, Soil - What is the rational for not collecting analytical soil samples from wells #7, 10, 17, 20, 21, and 22? Well #10 is the deep well, wells #20, 21 and 22 are located in the 600 Area between DR-1 and HR-1. It is recommended that at least samples be taken in one of the three wells located in the 600 Area and also at various depths below the water table in well #10, particularly at the bottom of the unconfined aquifer. It would seem more practical to collect soil samples within the deep well rather than the nearby shallow well. The samples collected within the saturated soils to the bottom of the deep well may not necessarily need to be collected at 5 ft intervals; however, they should be collected at changes in lithology.

Section 3.4.2, Ground Water - There is no mention of ground-water samples being collected at the bottom of well #10. Samples should be collected in the lower part of the unconfined aquifer to possibly detect dense non-aqueous phase liquids (DNAPLs) if they are present. Well #10 is apparently being drilled to monitor the semi-confined or confined zone at the bottom of the Ringold. Will water sampling within the lower Ringold be conducted the same as the sampling in the upper part of the unconfined aquifer? If not, there should be some elaboration on the sampling for constituents within the basal Ringold.

Section 3.5 - Geophysical Logging - All wells should be logged using gross gamma and with spectral gamma if higher gamma levels are observed with the gross gamma tool. This should be done once the tools have been either calibrated in Colorado or in test calibration model holes installed at Hanford. The geophysical logging may be especially important in the deeper holes (i.e., #10) to identify caliche layers or other fine sediment zones.

Section 3.6 - Aquifer Testing - Slug testing may be useless if it is conducted in wells that have been constructed with sand pack at the screened interval. Only values representative of the sand pack would be collected. It may be more useful to conduct slug testing before the sand pack has been installed or to actually do pump or aquifer testing instead of the slug testing as suggested by Section 5.1.6.2.5 of the 100-HR-3 workplan. This type of testing is also highly dependent on the transmissivity of the zone being tested. The more transmissive zones probably will not provide useful information.

Section 4.0, QA/QC Requirements - #3 for both ground water & soil, Analysis should include radionuclides, too. #5 for ground water and #6 for soil does not indicate what analysis will be performed.

Section 6.0, References - The references probably should list the Generic Well Specifications WHC-S-014 and the Letter of Instruction for KEH.

100-DR-1 SCOPE OF WORK

Section 3.1 - Soil Screening - The comment for Section 3.1 of the HR-3 scope of work applies to this section as well.

Section 3.3 - Soil Sampling (Physical Property) - As many physical samples should be gathered adjacent to facilities as possible. This provides data useful for modelling purposes that is directly pertinent to contaminated facilities. However, since samples are being collected at seven wells, these samples and those gathered at DR-1 may prove sufficient for our purposes.

Section 3.4, Analytical Sampling and Borehole Depths - The entire sample analysis protocol (as approved) should be included in this section of the DOW.

Section 3.5 - Geophysical Logging - All boreholes should be logged with gross gamma and spectral gamma tools. This is dependent on getting the tools calibrated as mentioned in the comments for HR-3 Section 3.5, above. Both of these borehole logging tools will provide useful information on the extent and spread of gamma emitting contamination, the depth clean fill cover extends and may provide some stratigraphic information.

Section 4.0, Analyses - During negotiations, it was agreed that a certain number of samples could be done using Level III methods. Certainly more stringent analyses requirements can be used, however, it may be only necessary to use CLP Level IV on a limited number of samples. This is not necessarily reflected in this section nor in the Table 2. CLP should be used for some samples but not all.

Section 5.0, QA/QC Requirements - Is this considered Level B validation?
Page 8, #3 - Analysis should include radionuclides, too.
#5 - This does not indicate what analysis will be performed.

Section 6.0, References - This is same comment as for HR-3 DOW.

Sincerely,

Charles S. Cline
Unit Manager HR-3
Washington State Dept. of Ecology

cc: Paul Day, EPA
T. Veneziano, WHC
Dave Nylander, Ecology
Darci Teel, Ecology
Krystyna Kowalik, Ecology